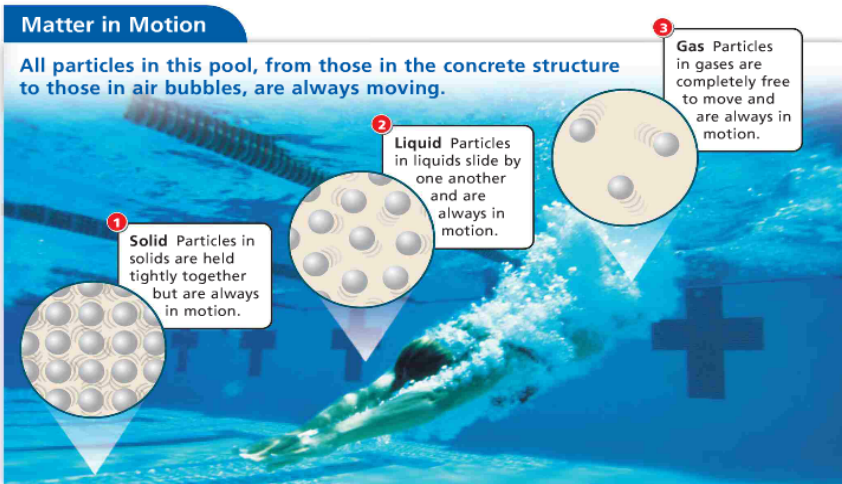


NOTES: STATES OF MATTER



Kinetic Theory of Matter

- States that all of the particles that make up matter are constantly in motion
 - Kinetic means “_____”
- Whether a substance exists as a solid, liquid, or gas depends on two things:
 - Particle _____: How fast the particles are moving
 - Particle _____: How strongly they are bonded to one another



1) SOLIDS

- Atoms are tightly packed together and vibrate microscopically
- _____ volume & shape

Crystalline Solids	Amorphous Solids
<ul style="list-style-type: none"> Very _____ 3D arrangement of molecules Movie theater seats. Soldiers marching All lined up in rows & columns Examples: iron, diamonds, ice, salt 	<ul style="list-style-type: none"> Atoms _____ Going to the beach, Seeing a concert in a park Each person has a spot, but there is no order or no pattern. No definite melting point Exist in two states: rubbery & glassy Examples: Butter, rubber, glass, wax

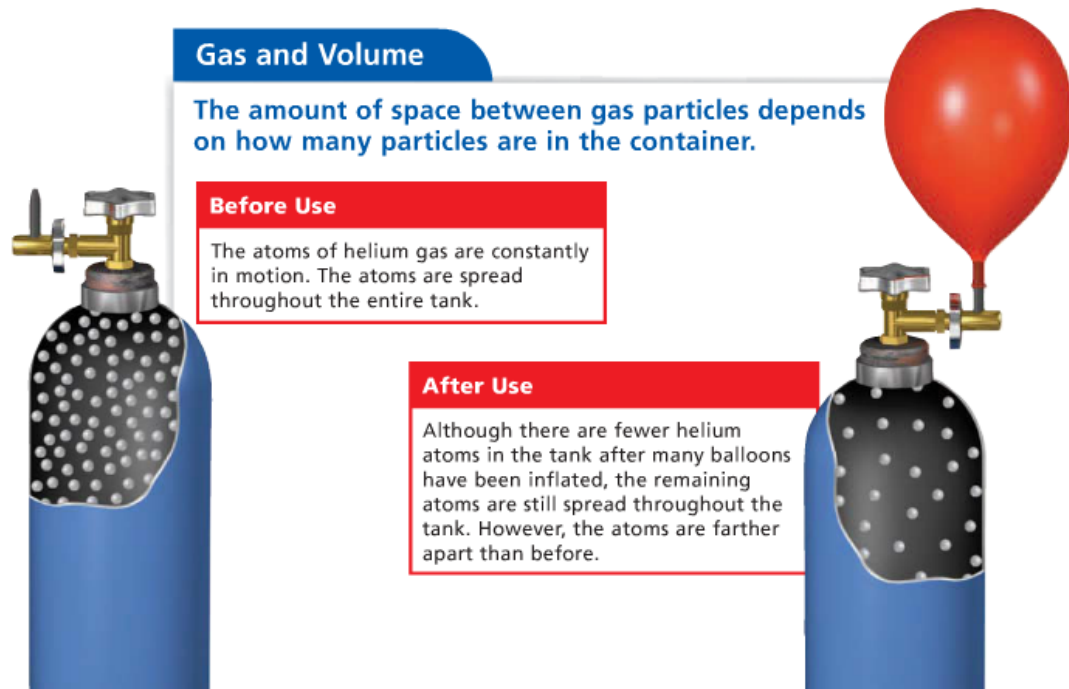
2) LIQUIDS

- Atoms can slide over and around one another, but still weakly bonded
- Fixed volume, but no distinct shape
- Take the _____ of its container
- Two Properties:**
 - _____ : Resistance of a liquid to flow. Think of pouring honey (high viscosity) vs. water (low viscosity).

2. _____: The molecules on the surface of a liquid are sometimes so strongly attracted to one another that they form a sheet across the top.

3) GAS

- Gas molecules are unconnected from one another and bounce all over the place.
- The collisions cause them to spread out as much as possible.
- _____ fixed volume or shape (fill any container)



4) PLASMA

- An _____ gas (a gas with a current or electricity)
- No definite shape or volume
- Particles have broken apart (gas)
- Most _____ state of matter in the universe

Natural Plasmas	Artificial Plasmas

5) BOSE-EINSTEIN CONDENSATE (BEC)

- Originally predicted in the 1920s by Satyendra Nath Bose and Albert Einstein & proved in 1995 at the University of Colorado
- A BEC is a microscopic blob of atoms that lose their individual identities and shape at extremely low temperatures.
- A “_____”, the opposite of _____
- <http://www.colorado.edu/physics/2000/bec/index.html>